

WATSON LEAVENWORTH KELTON & TAGGART
100 PARK AVENUE
NEW YORK 10017

LESLIE D. TAGGART
ELMER R. HELFERICH
NORMAN N. SCHUTTLE
JOHN T. KELTON
NICHOLAS JOHN STATHIS
WILLIAM H. VOGT III
HERBERT BLECKER
HOWARD K. KOTHE
ALBERT ROBIN
THOMAS V. HEYMAN
ROBERT E. KOSINSKI
STEVAN J. BOSSES

GEORGE J. BRANDT, JR.
JAMES J. DALEY
FRANK J. COLUCCI
GEORGE W. MACDONALD JR.
JAMES W. BADIE
ROBERT J. EICHELBERG
ROBERT M. FREEMAN
MAXIM H. WALDBAUM
PAUL E. O'DONNELL, JR.

LEONARD A. WATSON (1930-1960)
ELLIS W. LEAVENWORTH (1930-1959)

(AREA CODE 212)
683-4220

CABLE ADDRESS "WATSOLAW"
INTERNATIONAL TELEX
620866

January 4, 1973

Drs. Abitz, Morf, Brauns
Postfach 860,109
8 München 86, W. Germany

Re: German Patent Appln. P 21 43 388.5-41
Philip Morris Incorporated
Our File 582-736 Germany

Dear Sirs:

Reference is made to your letter of October 25, 1972 reporting issuance of an Official Action in the above-identified application. Please prepare and file response to the Official Action in accordance with our instructions given below and in no event later than the due date of January 28, 1973.

It is proposed that the claims on file be replaced with the five new claims attached hereto. The new main claim takes into account the prior art acknowledged in the description as well as exemplified in the cited art. Thus, you will note the main claim acknowledges it is old to use an impregnate for the tobacco and then heating the same to drive off the impregnate and cause the tobacco to puff. However, the prior art fails to teach or suggest the use of the particular impregnates and the particular heating requirements of the new claims.

The key to the present invention is the introduction of the agent into the cell wall of tobacco followed by a rapid

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heating to cause expansion to override loss of the agent by outward rediffusion. The reaction with CO_2 "fixes" the ammonia, i.e., lowers its vapor pressure, and ensures that a high concentration is present at the time of the exposure for expansion, despite delays in handling. Darkening of the tobacco is avoided, and the temperature of decomposition (thus expansion) is sharp so that competition from diffusion is much reduced.

Considering the cited prior art, the British patent is concerned with removing nicotine from tobacco and for that purpose exposes the tobacco to ammonia, ammonia being used to replace the nicotine in the tobacco. However, the patent is silent as to any advantage that ammonia might have in connection with subsequent puffing of the tobacco. Additionally there is an absence of teaching in this patent in respect of the important requirement for using additionally carbon dioxide as an impregnate. Furthermore, the exposure of tobacco to ammonia according to the patent occurs at 100°C , a temperature condition that deters substantial retention of ammonia in the tobacco cell walls. In contrast the present invention teaches that the temperature at which the tobacco is exposed to the ammonia and carbon dioxide should be maintained below 100°F ., preferably at 75°F . Accordingly, the expert would not recognize from the British patent that ammonia could be used advantageously for puffing or that the substantial quantity of ammonia (1 percent by weight) required by the present invention is necessary to effectively produce the degree of puffing sought. Further, there is nothing in British 969,144 to suggest that a rapid exposure to steam would result in expansion, nor is the density or bulk volume of the product discussed. Under the conditions disclosed by it, the tobacco would already be partially heated during the time of its exposure to ammonia, making for accelerated diffusion of ammonia to accomplish their purpose but also tending to reduce the amount of ammonia taken up by the tobacco and more importantly making the encounter with steam (presumably saturated) a relatively low heat transfer situation because of a lowered temperature differential. The product is dried as required and cooled, whereupon it is substantially free of ammonia. In short, nothing suggests the necessity of an abrupt encounter with very hot steam or air when ammonia is

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present in the tobacco, and the ammonia-free end product is not suitable for expansion by such an encounter.

The cited Swiss patent also concerns removing nicotine from tobacco but does not teach or suggest any puffing as an adjunct to the treatment. There is no heating of the tobacco as called for in the main claim taught in this patent and the carbon dioxide is used therein to remove residual ammonia from the tobacco following the denicotinizing operation. Neither component is recognized as being capable of producing puffing in the tobacco. Accordingly the Examiner's argument that the expert could readily see that tobacco can be puffed with the combination of ammonia and heat from the references should be contested. The purpose of admitting CO₂ is apparently simply to get rid of excess NH₃, and it is implied that the "very volatile" carbamic acid will soon disappear.

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The German OS also fails to teach or suggest the main claim subject matter. The reference does not disclose or suggest that the combination of ammonia and carbon dioxide are satisfactory for achieving puffing particularly in the degree achieved by the present invention.

In connection with comparative examples as not showing advance in the art, this point clearly should be contested since the data in certain examples may be converted to % increase in bulk volume. The example numbers are as shown in the U.S. Application. Increases in volume (from a representative value of 34 cc/10 g for untreated filler) are: Example 8, 550°F treatment, 62%; Example 10, 94%; and Example 11, 91%. Please make the necessary conversions.

Very truly yours,

George J. Brandt, Jr.

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Encl.

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